Department of Energy
Carlsbad Field Office
P. O. Box 3090
Carlsbad, New Mexico 88221

JUL 16 2004

Mr. Steve Zappe, WIPP Project Leader
Hazardous Waste Permits Program
Hazardous Waste Bureau
New Mexico Environment Department
2905 E. Rodeo Park Dr. Bldg. 1
Santa Fe, New Mexico 87505-6303

Subject: Comprehensive Monitoring Evaluation (CME) - Additional Information and Requested Clarification of Information on Items Previously Provided

Dear Mr. Zappe:

The purpose of this letter is to provide further information requested by the New Mexico Environment Department (NMED) to supplement and clarify the information provided to NMED in our June 18, 2004 response to information requests for the CME.

Round 18 WQSP-6 Sample Results in Electronic Form

The Round 18, WQSP-6 ground water sampling occurred June 16, 2004, analytical data has been received and the data validated. Enclosed is a 3.5-inch disk with the requested information.

Other Questions Answered

Mr. Carl Chavez of your office has also requested that we respond to the following questions:

- Provide clarification of elevations for top of casing elevations for wells WQSP 6 and WQSP-6A, e-mail to Jody Plum, June 23, 2004.
- Provide the location of the pump intakes on the WQSP wells, e-mail to Jody Plum, June 23, 2004.
- Provide clarification on how the Permittees specify analytical methods when requesting laboratory services, e-mail to Jody Plum, June 24, 2004.

The enclosures to this letter respond to each of these questions.

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Information Forthcoming

In your letter to us dated June 4, 2004, you requested electronic data for all constituents, wells, and sample rounds so that NMED can investigate the statistical derivation of background ground water concentrations. The letter also requested backup for the statistical calculations and an explanation and itemization of certain data points deleted from the background data set. In a conference call on June 25, 2004, you agreed to suspend the 30-day deadline for recalculation of baseline values. This was subsequently confirmed in your letter of July 2, 2004. We anticipate providing all additional information requested in your June 4, 2004 letter no later than July 24, 2004.

We certify under penalty of law that this document and all attachments were prepared under our direction or supervision according to a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on our inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of our knowledge and belief, true, accurate, and complete. We are aware that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations.

If you have any questions regarding this transmittal, please contact Mr. Jody Plum at (505) 234-7462.

Sincerely,

R. Paul Detwiler, Acting Manager
USDOE Carlsbad Field Office

for S. D. Warren, General Manager
Washington TRU Solutions LLC

Enclosure

cc: w/enclosure
C. Walker, Trinity Engineering

cc: w/o enclosure
J. Kieling, NMED
J. Bearzi, NMED

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Enclosure 1
WIPP Top of Casing Elevations for Wells WQSP-6 and WQSP –6A

NMED noted that the top of casing (TOC) elevations from WQSP-6 and 6a are inconsistent with the elevations displayed in Table v.c.1- well locations, from Permit Module V, Page V-2 of 11. NMED asked whether there is an error in the top of casing elevation table for the WQSP wells submitted June 18, or in Table v.c.1 in the Permit.

Response: The operating contractor has analyzed discrepancies regarding WQSP-6 and WQSP-6A top of casing elevations in detail, and has found the following:

- The table of top of casing elevations provided NMED (via letter, CBFO to NMED June 18, 2004) came from the original survey information and is correct. Specifically, the top of casing elevation for well WQSP-6 is 3364.7 ft, and the TOC for well WQSP-6A is 3363.8 ft.

- The well completion diagrams in Attachment L of the permit, specifically pages L-63 through L-69 and given NMED on May 18 at the start of the Comprehensive Monitoring Evaluation, are correct for top of casing elevation, and specifically for WQSP-6 and WQSP-6A.

- The Basic Data Report for well WQSP-6 and WQSP-6A contains switched data for the top of casing elevations for wells WQSP-6 and WQSP-6A. The correct TOC elevations are:

  WQSP-6 - 3364.7 ft
  WQSP-6A - 3363.8 ft

- Table V.C.1 of the permit also contains switched data for the top of casing elevations for wells WQSP-6 and WQSP-6A.

- Every water level report has the depth to water in wells WQSP-6 and WQSP-6A correct (that is, the wells are not physically mislabeled). However, the same reversal of TOC elevations for wells WQSP-6 and WQSP-6A (as on Table V.C.1) makes the calculated water level elevations incorrect.

There will be virtually no impact on the Culebra potentiometric surface maps flow rate and / or direction, or the temporal water level trend which is independent of the reference point. The potentiometric maps are generated from a large data set and over a large area; one data point change will not perturb the contours. Nevertheless, corrections will be made, and this information will go into the RCRA operating record.

Enclosure 2
WIPP Pump Intake Depth for Each WQSP Well

NMED noted that the diagrams submitted to NMED on June 18, 2004 did not provide the depth to the sample flow line intake based on the typical configuration for pump installation, supporting equipment diagram and other well diagrams submitted. NMED asked for the depth and interval relative to top of casing (TOC) elevation of the actual pump intake interval in each WSQP well.

Response: Groundwater in each WQSP well enters the pump intake at the midpoint of the screened section of the pump located at the bottom, and nominally two inches long. Connected to the pump bottom is the motor. The pump and motor installation are above the top of the screen to force water from the screen to flow up through the casing, past the motor and into the pump. This positioning is common in any submersible pump setting, because this action is what cools the motor.

The pump installation diagrams provided to NMED all show the bottom of the pump / motor assembly (the operative word being motor), relative to top of casing.

- The motor used is 23.625 inches long. The pump itself is 36-inches long and includes the screened section as part of the 36 inches.

- The elevation of the pump intake is:

  ELEVATION (msl) = TOC - depth to bottom of pump/motor assembly + 23.625 inches (motor) + 1 inch (i.e., one half of the nominal screen section length)

Calculations are provided in the table below, both relative to sea level and relative to the top of screen.

NMED also asked at what point above the pump an elbow taps the riser pipe and begins the 3/8 tubing to ground surface. This dimension is approximately 1 foot.

NMED also requested, via conference call on July 1, 2004, the stabilized depth to water in each WQSP well and the corresponding pumping rate. This information is shown in Part 3 of the table. Note that the drawdown and final depth to water were calculated, and not measured, for each WQSP well previously tested that has a documented specific capacity. WIPP uses transducers affixed near the pump to measure drawdown. The drawdown during purging these wells was in the same range as the sensitivity of the transducer. The equation for drawdown, s, is:

Δs = Q / Specific Capacity, where Q is the steady long term purge rate.

The drawdown was measured, but final depth to water still calculated, for each WQSP well previously tested that had a drawdown so great in the process of testing that specific capacity could not be measured or was considered unreliable. For all WQSP wells in the next round, late-term, quasi-steady state water levels will be measured to confirm the information in Part 3 of the table. During the conference call, NMED suggested that for low flows, the pump should be in the well screen so as to draw water specifically from

the highest transmissivity zone within the screened interval. The respondents wish to make the following points:

- WIPP uses a traditional well sampling method with the removal of three casing volumes. The Permittees sample at a low flow rate because of formation yield, but this is not a "Low-Flow Sampling" technique as described in the NMED Guidance Document titled "*Use of Low-Flow and Other Non-Traditional Sampling Techniques for RCRA Compliant Groundwater Monitoring.*"

- By simple mass balance, once the first casing volume is removed regardless of drawdown, the second two casing volumes must come from the formation. There is no other possibility for the origin of formation water.

- The water entering the pump intake is integrated over the well screen, and is by definition, weighted according to the relative contribution of water from each interval within the screen. This is consistent with detection monitoring of the Culebra as a whole aquifer section.

- Traditional sampling is at measurable drawdown, three casing volumes, and provides an integrated sample.

- Low-flow sampling, which WIPP does not perform, is at a minimum drawdown, producing only as much purge water needed for field parameter stabilization, and provides a sample only from the section of the well screen adjacent to the pump intake.

- The Permittees anticipate further discussion regarding traditional versus low-flow sampling with the NMED.

Intake Depth of Pumps for WIPP Detection Monitoring Program (DMP) Wells

Part 1. Elevation of Intake

Well ID	Top of Casing Elevation (TOC) (ft, msl)	Depth to Bottom of Pump / Motor Assembly (ft)	Depth to Pump Intake from TOC (ft)	Elevation of Intake (ft, msl)
WQSP-1	3419.2	700.0	697.9	2721.3
WQSP-2	3463.9	805.0	802.9	2661.0
WQSP-3	3480.3	840.0	837.9	2642.4
WQSP-4	3433.0	760.0	757.9	2675.1
WQSP-5	3384.4	640.0	637.9	2746.5
WQSP-6	3364.7	580.0	577.9	2786.8
WQSP-6A	3363.8	183.0	180.9	3182.9

Part 2. Intake Position Relative to Top of Screen

Well ID	Depth to Top of Screen (relative to TOC) (ft)	Depth to Bottom of Pump/Motor Assembly (relative to TOC) (ft)	Distance to Pump Intake from top of Screen (ft)
WQSP-1	702.0	700.0	4.1
WQSP-2	811.0	805.0	8.1
WQSP-3	845.0	840.0	7.1
WQSP-4	765.0	760.0	7.1
WQSP-5	648.0	640.0	10.1
WQSP-6	582.0	580.0	4.1
WQSP-6A	189.0	183.0	8.1

Part 3. Pumping Relative to Pump Intake

Well ID	Depth to Top of Screen (ft relative to TOC)	Depth to Bottom of Pump/Motor Assembly (ft relative to TOC)	Distance to Pump Intake from Top of Screen (ft)	Casing Volume (gallons)	Total Volume Pumped (gallons)	Specific Capacity [1]	Flow Rate (GPM)	Calculated Drawdown (ft)	Beginning Depth to Water (ft)	Calculated Ending Depth to Water (ft)
WQSP-1	702.0	700.0	4.1	262	1083	0.11	0.36	3.27	365.37	368.64
WQSP-2	811.0	805.0	8.1	317	1188	0.076	0.33	4.34	404.37	408.71
WQSP-3	845.0	840.0	7.1	296	972	N/A [2]	0.35	200.00 [3]	467.68	667.68
WQSP-4	765.0	760.0	7.1	254	1384	0.038	0.51	13.36	445.29	458.65
WQSP-5	648.0	640.0	10.1	211	1060	N/A [2]	0.39	53.10 [3]	381.18	434.28
WQSP-6	582.0	580.0	4.1	189	743	N/A [2]	0.21	154.7 [3]	346.37	501.07
WQSP-6A	189.0	183.0	8.1	27	1187	1.79	0.66	0.37	166.60	166.97

Footnotes:

(1) Calculated based on aquifer tests by Sandia National Laboratories (SAND98-0049)

(2) No aquifer tests due to exceedingly low yield

(3) From pressure transducer attached to pump (actual sampling, Round 18)

Enclosure 3
Demonstration of Analytical Methods Specification to the Contract Laboratory

NMED requested procedures or instructions that show how the Permittees request analytical methods from its contract laboratories. It was not clear from WIPP technical procedures how certain columns on the "Request For Analysis" Form are filled out. The Detection Monitoring Plan (DMP) does specify parameters, but not the methods. Section L-4c(3) states, "Methods will be specified in procurement documents..." NMED asked for the document(s) that specify the analytical methods.

Response: The subcontract laboratory Statement of Work (SOW) is part of the contract with the analytical laboratory, Trace Analysis of Lubbock Texas. It lists the analytical methods allowed for all target analytes. These are industry standard methods that include accepted EPA, ASTM, ANSI, and APHA methods. The methods used by the contract lab are approved by the Permittees and are in accordance with this Statement of Work. The SOW is the procurement document referenced in the Permit, and in this question, and the pertinent sections of this document are provided.

Technical procedure WP 02-EM1006, Final Sample and Serial Sample Collection, Attachment 2 (Final Sample Checklist) is in revision and will provide more specific information and guidance in filling out the Request for Analysis form, in part because of this question. The Request for Analysis form is submitted with a Chain of Custody form to the contract laboratory with the samples. The information in the Final Sample Checklist concerning preservation of samples comes from the sample handling and preservation section of the specific analytical method that is used for the analysis.